Terrestrial Field Dissipation

DATA EVALUATION RECORD

STUDY 2

CHEM 053201 Methyl Bromide §164-1

FORMULATION--90--FORMULATION NOT IDENTIFIED

STUDY ID 00013032
Lear, B. 1972. Effect of methyl bromide on control of different nematodes. Unpublished study including letter dated Jan. 25, 1972 from B. Lear to Richard C. Storkan, received June 19, 1973 under 464-104; prepared by Univ. of California--Davis, Agricultural Experiment Station, Dept. of Nematology, submitted by Dow Chemical U.S.A., Midland, MI; CDL008486-H.

DIRECT REVIEW TIME = 4

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This study was previously reviewed by Dynamac in 1985. A copy of the review is included in this document because it provides useful information for the ground water assessment; the study was not reevaluated because no new information has been provided to date in response to the previous review.

CONCLUSIONS:

Field Dissipation - Terrestrial

1. This study cannot be used to fulfill data requirements.

2. Methyl bromide, at 300-800 lb/A, dissipated with a half-life of <4 days at a 1-foot sampling depth from field plots in California. Concentrations of methyl bromide at the 4- to 8-foot depths generally increased until 6-8 days posttreatment when tarps covering the treated plots were removed.

3. This study is scientifically sound, but does not meet Subdivision N guidelines for the following reasons:

   complete field test data, including meteorological data and application procedures, were not provided;

   the test soil was not characterized;

   the test substance was not characterized; and

   the plots treated at 400 and 600 lb/A were not sampled until 4 days posttreatment.

4. After application, methyl bromide was found at soil depths of up to 8 feet. Therefore, methyl bromide is sufficiently mobile to contaminate ground water.

METHODOLOGY:

Four fallow field plots and four plots planted to Sudan grass (each 182.5 x 55 feet; test soil not characterized) located in St. Helene, California, were treated with methyl bromide (test substance uncharacterized) at 300-800 lb/A in September, 1970. The treated plots were covered with tarps. Tarps covering the treated plots were removed 6-8 days posttreatment. To determine methyl bromide concentrations, two locations within each plot were sampled (soil depths of 1-8 feet) at 1, 4, 6, 8, 11, and 14 days after treatment and analyzed using GC.

DATA SUMMARY:

Methyl bromide, at 300-800 lb/A, dissipated with a half-life of <4 days from the 1-foot sampling depth of fallow or grass-covered field plots in California (Tables 1-4). While the tarps were in place, methyl bromide concentrations at lower soil depths (test soils not characterized) generally increased. There was no appreciable difference in methyl bromide dissipation between the fallow and grass-covered plots.

COMMENTS:

1. Field test data, including application procedures and meteorological data, were not provided.

2. The test substance and test soil were not characterized.

3. No preapplication soil samples were taken, and soil samples were not taken from plots treated at 400 and 600 lb/A until 4 days after treatment.

4. It could not be determined whether application rates were given as pounds of product or pounds of active ingredient per acre.

5. The reported concentrations of methyl bromide in soil (ppm) represent the amount of methyl bromide gas in a volume of soil air space.

6. The test plots had previously been planted to grapes; the vines had been removed in the spring of 1970.

TABLES/FIGURES

Table 1. Methyl bromide concentrations (ppm) in field plots treated at 300 lb/A.

Sampling depth) (feet)	Sampling interval (days)					
	1	4	6	8	11	14
			Fallow plot - sampling location 1			
1	2262	954	295	137	116	53
4	5766	2561	1527	1339	512	258
6	3238	2426	1956	978	871	439
8	510	1179	1107	908	723	483
			Fallow plot - sampling location 2			
1	1174	718	65	38	34	33
4	2351	2111	1566	792	458	151
6	709	1662	1605	1129	842	411
8	48	449	678	675	637	417
			Sudan grass plot - sampling location 1			
1	3371	1033	432	192	102	50
4	4435	2291	1481	931	501	230
6	1174	1168	947	582	205	140
8	88	348	374	349	285	144
			Sudan grass plot - sampling location 2			
1	2084	898	327	175	46	11
4	5145	2741	1808	931	512	269
6	1297	2156	1660	1083	598	313
8	543	1055	1052	908	768	505

Table 2. Methyl bromide concentrations (ppm) in field plots treated at 400 lb/A.

Sampling depth (feet)	Sampling interval (days)[a]				
	4	6	8	11	14[b]
	Fallow plot - sampling location 1				
1	1123	573	64	34	10
4	2696	2478	1723	939	410
6	3280	2899	2142	1844	1200
8	3325	3039	2096	1935	1370
	Fallow plot - sampling location 2				
1	1138	432	62	57	40
4	808	468	47	17	--
6	224	160	18	3	--
8	56	105	102	18	--
	Sudan grass plot - sampling location 1				
1	756	561	141	61	20
4	3504	2478	1598	899	450
6	5482	4488	3167	1913	1110
8	5841	4676	2887	2413	1630
	Sudan grass plot - sampling location 2				
1	1932	1146	757	308	160
4	4583	3226	2026	1024	590
6	4493	3179	2235	1411	1200
8	2156	2057	1723	1138	920

[a] No day-1 data provided for this treatment rate.

[b] The last digit in this column was illegible, and has been presented as a 0 by the reviewer.

Table 3. Methyl bromide concentrations (ppm) in field plots treated at 600 lb/A.

Sampling depth (feet)	Sampling interval (days)[a]				
	4	6	8	11	14
		Fallow plot - sampling location 1			
1	898	380	116	68	67
4	1269	1052	349	23	33
6	1722	1652	1281	831	899
8	3504	3273	2748	2595	1715
		Fallow plot - sampling location 2			
1	449	239	87	67	58
4	2381	1636	694	398	176
6	2493	2135	1304	956	527
8	2606	2743	1886	1323	1075
		Sudan grass plot - sampling location 1			
1	1654	1274	489	343	177
4	4763	3811	1886	1366	735
6	3864	3273	1723	1411	1061
8	1319	1496	1351	1275	1141
		Sudan grass plot - sampling location 2			
1	890	686	330	87	38
4	2965	2735	1420	1184	647
6	3684	3740	2794	2049	1426
8	2426	2805	2422	2413	2106

[a] No day-1 data provided for this treatment rate.

Table 4. Methyl bromide concentrations (ppm) in field plots treated at 800 lb/A.

Sampling depth (feet)	Sampling interval (days)					
	1	4	6	8	11	14[a]
			Fallow plot - sampling location 1			
1	3282	696	214	61	122	100
4	7807	2561	2525	2096	1685	1300
6	1656	4763	4676	3850	3460	2500
8	1264	6290	4956	2794	4325	2300
			Fallow plot - sampling location 2			
1	2974	820	436	186	102	100
4	964	1157	935	652	34	--
6	160	1213	1870	1653	1525	650
8	365	1623	2805	2561	2777	2190
			Sudan grass plot - sampling location 1			
1	3726	1055	573	349	247	130
4	6565	4134	3179	2422	1616	950
6	3681	6680	5798	4051	3430	2030
8	1153	5571	5548	4378	3963	3070
			Sudan grass plot - sampling location 2			
1	11533	4347	4115	2142	1787	1110
4	4081	1359	794	396	319	170
6	2838	5392	4302	2887	2550	1770
8	1286	3325	3367	3539	3642	2690

[a] The last 1-2 digits in this column were illegible, and have been presented as 0 by the reviewer.

CASE GS0335 METHYL BROMIDE STUDY 2 PM PM# 03/23/84

CHEM 053201 Methyl Bromide

BRANCH EFB DISC 30 TOPIC 050530 GUIDELINE 40 CFR 163.62-10b

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SUBST. CLASS = S.

DIRECT RVW TIME = 5 1/2 (MH) START-DATE END DATE

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CONCLUSIONS:

Field Dissipation - Terrestrial

1. This study is scientifically valid.

2. Methyl bromide (test substance uncharacterized), at 300-800 lb/A, dissipated from field plots in California, with a half-life of <4 days at a 1-foot sampling depth. Concentrations at the 4- to 8-foot depths generally increased until 6-8 days posttreatment, when tarps covering the treated plots were removed.

3. This study does not fulfill EPA Data Requirements for Registering Pesticides because the test substance was not characterized, complete field test data were not provided, the test soil was not characterized, rainfall and irrigation amounts were not reported, and the formation and decline of degradates was not addressed.

MATERIALS AND METHODS:

Eight field plots (182.5 x 55 feet) located in St. Helene, California, were treated with methyl bromide (test substance uncharacterized, source unspecified) at 300-800 lb/A in September, 1970, and covered with tarps. The test soil was not characterized. The plots had previously been planted to grapes; in the spring of 1970, the vineyard was pulled and Sudan grass was planted on four of the plots. The four remaining plots were left fallow. Tarps covering the treated plots were removed 6-8 days posttreatment. To determine methyl bromide concentrations, two locations within each plot were sampled (soil depths of 1-8 feet) at 1, 4, 6, 8, 11, and 14 days after treatment and analyzed using GC.

REPORTED RESULTS:

Methyl bromide dissipated rapidly from the 1-foot sampling depth of all field plots; the half-life was <4 days in plots treated at 300-800 lb/A (Tables 1-4). While the tarps were in place, methyl bromide concentrations at lower soil depths generally increased. There was no appreciable difference in methyl bromide dissipation when applied to fallow or grass-covered plots.

DISCUSSION:

1. The test substance and test soil were not characterized.

2. No preapplication soil samples were taken, and samples were not taken from plots treated at 400 and 600 lb/A until 4 days after treatment.

3. Field test data, including slope of test site, depth to water table, and soil and air temperatures, were not provided.

4. It could not be determined whether application rates were given as pounds of product or pounds of active ingredient per acre.

5. Meteorological data were not provided.

6. The formation and decline of degradates was not addressed.

7. Reported concentrations of methyl bromide in soil (ppm) represent the amount of methyl bromide gas in a volume of air.